

# Radiology Compliance Branch

## RADIATION PROTECTION SECTION



Division of Health Service Regulation • N.C. Department of Health and Human Services

### PREGNANCY OF EMPLOYEES AND PATIENTS

#### Rule .0104 DEFINITIONS

- (28) "Declared pregnant woman" means a woman has voluntarily informed the licensee or registrant, in writing, of her pregnancy and the estimated date of conception. The declaration remains in effect until the declared pregnant woman withdraws the declaration in writing or is no longer pregnant.
- (42) "Embryo/Fetal" means the developing human organism from conception until time of birth.

#### Rule .1610 - DOSE EQUIVALENT TO AN EMBRYO/FETUS

- (a) The licensee or registrant shall ensure that the dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv). Record keeping requirements for doses to an embryo/fetus are provided in Rule .1640.
- (b) The licensee or registrant shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in paragraph (a) of this rule.
- (c) The dose to an embryo/fetus shall be taken as the sum of:
- (1) the deep-dose equivalent to the declared pregnant woman; and
  - (2) the dose to the embryo/fetus from radionuclides in the embryo/fetus and radionuclides in the declared pregnant woman.
- (d) If the dose to the embryo/fetus is found to have exceeded 0.5 rem (5 mSv) of this dose, by the time the woman declares the pregnancy to the licensee, the licensee shall be deemed to be in compliance with paragraph (a) of this rule, if the additional dose to the embryo/fetus does not exceed 0.05 rem (.5 mSv) during the remainder of the pregnancy.

In recognition of the possibility of increased radiation sensitivity and because dose to the embryo/fetus is involuntary on the part of the embryo/fetus, this more restrictive dose limit has been established for the embryo/fetus of a declared pregnant radiation worker.

#### .1614(c) MONITORING OF EXTERNAL AND INTERNAL OCCUPATIONAL DOSE

Each registrant shall monitor exposures to radiation at levels sufficient to demonstrate compliance with the occupational dose limits of this Section. As a minimum: declared pregnant women likely to receive, during the entire pregnancy, from sources of radiation external to the body, a deep dose equivalent in excess of 0.1 rem.

#### .1640(f) RECORD KEEPING

The licensee or registrant shall maintain the records of dose to an embryo/fetus with the records of dose to the declared pregnant woman. The declaration of pregnancy shall also be kept on file, but may be maintained separately from dose records.



## PREGNANCY OF EMPLOYEE

A number of studies have suggested the embryo/fetus may be more sensitive to ionizing radiation than adults may be, especially during the first trimester of gestation. The National Council on Radiation Protection and Measurement has recommended special precautions be taken to limit exposure when an occupationally exposed woman could be pregnant. Genetic effects are those that affect the offspring of exposed persons, usually in the range of 20-200 rem. At normal exposure levels, genetic effects of radiation are negligible.

It is the responsibility of the radiology employee to inform the supervisor of pregnancy. Until there is a declaration of pregnancy, the occupational dose limits remain in effect.

The general principles for maintaining exposure to radiation as low as reasonable achievable, is time, distance and shielding. Decrease your time near radiation source, increase your distance from the radiation source, and increase the shielding between you and the radiation source.

### Declaration of Pregnancy should include:

- Your name,
- Estimated date of conception/or due date, and
- Date you signed the Declaration of Pregnancy,

To declare pregnancy, no documented medical proof is necessary. Declaration of pregnancy **MUST BE IN WRITING**; this legally protects both employee and employer.

### Once Declaration of Pregnancy is signed:

1. The employee should receive counsel from her supervisor and/or the RSO to include:
  - a. Review of exposure history to ensure compliance with .1640 (c) and (d);
  - b. Educational review on exposure levels for unborn children (maximum permissible dose, 0.5 rem) and fetal risk associated with exposure to radiation;
  - c. Discussion of employees work schedule after which the supervisor, RSO or employee may request a reassignment of duties to minimize exposure; and
  - d. Supply Declared pregnant worker a monitor for fetal dose.

## PREGNANCY OF PATIENTS

### For Patients who may be pregnant:

All patients in their reproductive years between 12 and 45 should be questioned regarding the possibility of pregnancy. Question the patient as sensitively and unobtrusively as possible to protect a woman's privacy. If pregnancy is likely, notify the radiologist or the referring physician. A pregnancy test is recommended to confirm pregnancy.

### If the patient is pregnant:

- Notify the attending or referring physician.
- Physician should decide if the X-ray is necessary at this time.
- If the X-ray is necessary, inform the patient thoroughly of risks associated with radiation to the embryo/fetus.
- The decision for continuing with the X-ray exam is the patient's choice.
- If the patient decides to proceed with the X-ray exam, shield the patient. Document shielding of the patient and consider obtaining a signed waiver from the patient.
- If the exam is in the abdominal region, a modified X-ray exam may be necessary. Consult with the physician and/or RSO.
- The risk to embryo/fetus from 0.5 rem or even 5 rem of radiation exposure is relatively small compared with some other avoidable risk, such as alcohol consumption and cigarette smoking.